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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/536,980	05/31/2005	Suguru Fukui	HOK-0277	6337

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EXAMINER

ROSENBERGER, FREDERICK F

ART UNIT	PAPER NUMBER
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2884

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/536,980

Applicant(s)

FUKUI ET AL.

Examiner

Frederick F. Rosenberger

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8 and 11 is/are rejected.
- 7) ☒ Claim(s) 7, 9, 10, 12 and 13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/31/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d) from the International Bureau for PCT/JP04/17129, which papers have been placed of record in the file. The International Search Report, dated 14 March 2005, for said application has also been considered.

Specification

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The present abstract is too long (> 160 words).

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

4. Claim 13 is objected to because of the following informalities: In claim 13, lines 1-2, the positive recitation of "said switch controlling circuit" lacks proper antecedent basis in claim 7. Claim 13 should probably depend upon one of claims 8-12. Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 8 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 8, applicant recites in 7-8, "a switch that is connected between from said constant voltage supply circuit to said resistor and said detection circuit". Said recitation is confusing and unclear. Specifically, it cannot be determined exactly how the switch is connected to the constant voltage supply circuit, the resistor and the detection circuit, especially since the resistor is connected between the voltage amplification circuit and the detection circuit. The "between from" further compounds the lack of clarity in the claim language. For the purposes of this Office action, as best as can be interpreted, the switch exists along a pathway connecting the constant voltage supply to a node on a pathway between the resistor and the detection circuit,

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whereby operation of the switch allows connection of the constant voltage supply to the pathway between the resistor and the detection circuit.

Similar issues are present with regards to claim 11. In claim 11, lines 5-6, applicant recites "a switch that is connected between from said constant voltage supply circuit and said voltage amplification circuit to said detection circuit". Said recitation is confusing and unclear. Specifically, it cannot be determined exactly how the switch is connected to the constant voltage supply circuit, the voltage amplification circuit and the detection circuit. The "between from" further compounds the lack of clarity in the claim language. For the purposes of this Office action, as best as can be interpreted, the switch exists along a pathway connecting the constant voltage supply to a node on a pathway between the voltage amplification circuit and the detection circuit, whereby operation of the switch allows connection of the constant voltage supply to the pathway between the voltage amplification circuit and the detection circuit.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

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were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1-4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hironaka et al. (US Patent # 6,677,589 and US Patent Application Publication # 2003/0047671) in view of Takada et al. (US Patent # 5,917,187) and North (US Patent # 6,081,558).

With regards to claim 1, Hironaka et al. disclose an IR detecting device comprising:

A pyroelectric element **10** (Figure 1) that generates a current signal based on incoming IR radiation (abstract);

An I/V conversion circuit **20** that converts the current signal into a voltage signal (column 1, lines 45-47);

A voltage amplification circuit **30** that amplifies the voltage signal to issue an amplified voltage (column 1, lines 47-48);

A detection circuit **40** that provides a comparison between the amplified voltage and a detection threshold voltage using a level monitor **50** and to issue a detection signal of the IR radiation (column 1, lines 48-52);

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An output circuit **70** that issues an output signal based on the detection signal (column 1, lines 53-54); and,

A drive power supply circuit **80** that supplies a drive current to each of the signal circuits (Figure 1 – see traces from circuit **80** to each of **20, 30, 50, 70**);

Wherein the drive power supply circuit is comprised of:

A current generating circuit **100** which includes a reference current source and a variable current source, said reference current source configured to generate a reference current (column 4, lines 59-61) and said variable current source being configured to provide a variable current varying with the reference current (column 4, line 67 – column 5, line 6); and

A distribution circuit (Figure 1 - see traces from circuit **80** to each of **20, 30, 50, 70**) configured to distribute the drive current based on the variable current source to each part of the signal circuits.

First, it is noted that Hironaka et al. are silent with regards to the voltage amplification circuit selectively amplifying components with prescribed frequencies of the voltage signal. Takada et al. teach that it is known in the art to selectively amplify the voltage signal of a pyroelectric detector based on frequencies around 1Hz to discriminate motion of a human (column 1, lines 11-23). Thus, it would have been obvious for a person having ordinary skill in the art at the time the invention was made to selectively amplify components with prescribed frequencies of the voltage signal so as to discriminate motion of a human being as is common in the art, as taught by Takada et al.

Second, it is noted that Hironaka et al. are silent with regards to the inclusion of a fixed current source and the appropriate distribution circuit components for distributing the drive current based on the fixed current source to part of the signal circuits. Instead, Hironaka et al. teach that the same drive current (a variable drive current) is distributed to each of the circuit components simultaneously. North teach a method for reduced power consumption for an IR detector wherein a variable bias current is supplied to some elements of the signal circuit while a fixed bias current is supplied to other elements of the signal circuit (column 8, lines 9-39). North teaches that such a scenario saves power consumption by reducing the variable bias current during sleep states while enabling other circuits to perform adequately by providing a fixed bias current (abstract; column 7, lines 19-23; column 8, lines 18-23). Thus, it would have been obvious for a person having ordinary skill in the art at the time the invention was made to provide a fixed current source and the necessary distribution circuit to supply the fixed current source to part of the signal circuits, so as to reduce power consumption while enabling adequate performance of components which require constant current supplies, as taught by North.

With regards to claim 2, the combination as discussed with regards to claim is silent with regards to a plurality of variable current sources individually connected to the remaining part of the signal circuit. Instead the combination suggests the use of a single variable source. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use multiple variable current sources instead of just a single variable current source, since it has been held that the

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mere duplication of the essential working parts of a device involves only routine skill in the art. In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960).

With regards to claim 3, Hironaka et al. teach a terminal 91 for receiving a changeover signal (column 6, lines 18-20) for activation of a rest mode. In the rest mode, the variable current source is controlled to change the current to the limited source current level in accordance with the changeover signal for reduced power consumption (column 5, lines 1-6; column 6, lines 23-31).

With regards to claim 4, Hironaka et al. teach that the variable current is adjusted to any of the prescribed current levels based on variation of the power voltage from the voltage amplifier in comparison to the threshold value, as determined by the level monitor (column 1, line 60 – column 2, line 18).

With regards to claim 6, Hironaka et al. teach a voltage amplification circuit comprising a two-stage amplifier (column 5, lines 18-20), the first stage being a differential stage (column 5, lines 28-32) and the second stage serving as an output stage (column 5, lines 32-34). The distribution circuit is configured to distribute the variable supply current to each stage, wherein in standby mode both stages receive a limited supply current and in operation mode the first stage receives the limited source current and the second stage receives the rated source current (column 2, line 62 – column 3, line 8).

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10. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hironaka et al., Takada et al., and North, as applied to claim 1 above, and further in view of Butler (US Patent # 6,730,909 and US Patent Application Publication # 20020074499).

The combination of Hironaka et al., Takada et al., and North disclose all the limitations of parent claim 1, as discussed above. However, the combination is silent with regards to the variable current source adjusting the variable current based on variations in ambient temperatures.

However, Butler teaches that detector output signals, including pyroelectric detectors (column 9, lines 25-28), may include undesirable variations due to temperature fluctuations not caused by incident IR radiation of interest (column 1, lines 55-58). Butler further teaches that these deleterious effects can be mitigated by dynamically adjusting an operating parameter of the device, including the DC bias current applied to the sensor (column 2, lines 28-34, 38-43).

Thus, it would have been obvious for a person having ordinary skill in the art at the time the invention was made to provide the variable current source to vary the variable current from the variable current source according to the changes in ambient temperature so as to account for undesirable signal variation due to temperature fluctuations, thereby improving detected signal quality, as taught by Butler.

Allowable Subject Matter

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11. Claims 7, 9, 10, 12, and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 8 and 11 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 7, the prior art of record teaches all the limitations of parent claim 1, as discussed above. The examiner further notes that Hironaka et al. provide for a current changeover circuit, in the form of level monitor **50**, and the associated threshold comparison for signal generation (see column 5, lines 50-67). Further, Hironaka et al. teach a variable current source **100** capable of changing the current level dependent upon the signal receive (see abstract). Hironaka et al. also teaches a suppression component, namely a rest mode wherein the output of the level monitor is ignored or disabled, thereby preventing output by the control output generator (column 6, lines 23-28). However, the examiner notes that the suppression aspects discussed in Hironaka et al. are with regards to an externally actuated rest mode, wherein the direct current supply keeps supplying a limited source current to the signal circuits until an external reset signal is received (column 6, lines 18-34). There is no change in the variable current supply (i.e. limited source current) suggested by the disclosure of

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Hironaka et al. coincident with the activation of suppression. Thus, Hironaka et al. do not teach that the suppression circuit is configured to start suppression of the output signal from a start point in time on or before which the variable current source changes the variable current and releasing the suppression after a prescribed period of time. Further, the prior art of record fails to teach or reasonably suggest modifying Hironaka et al. to attain the missing limitations of the claimed invention. As such, the limitations of claim 7 in combination with the limitations of claim 1 would be allowable. Claims 8-13 would be allowable by virtue of their dependency upon claim 7.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nomura et al. (US Patent # 5,654,550) teach a frequency filtering differential amplifier with output for a pyroelectric sensor.


14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frederick F. Rosenberger whose telephone number is 571-272-6107. The examiner can normally be reached on Monday - Friday with flexible hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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